

Design of Trust based Context Aware Routing Protocol in Vehicular Networks

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Vehicular Ad Hoc Network (VANET) is an active application of Mobile Ad Hoc Network (MANET) which aims to ensure driver safety and to provide information to the vehicular users. In VANETs, the vehicles are capable of communicating with other neighbouring vehicles and road side unit (RSU). The messages generated by the source vehicle is very important and in certain context, it can be very critical e.g., accident warning. Therefore, the transmission of messages from source to destination is quite a challenging task. Currently, VANETs are based on traditional IP based internet architecture where the routing of messages takes place only for vehicles with valid IP address. However, messages in VANETs are more important than the vehicles itself, therefore, assigning IP address to every vehicle may not be a good practice. This issue is addressed by the new internet architecture called Named Data Networking (NDN) [1], where the content (messages) plays a vital role in the network. In NDN based VANETs, vehicle can have one of the following roles [2]: data consumer, data producer, data forwarder and data mule. Data consumer generates the request, which is forwarded to the data producer via data forwarders and data mule. The data producer replies back to data consumer with the approval to the request.

In VANETs, high priority messages should immediately be transmitted to the vehicles in such a way that the messages received by these vehicles can be trusted. Therefore, this study propose the concept of Context Aware Routing Protocol (CARP) in NDN based VANETs which aims to transmit trusted information in a secure and reliable way. CARP considers different scenarios, and it ensure to transport the message as soon as possible in a highly secured and trusted environment. CARP takes the Quality of Service (QoS) of applications into account which makes it a highly efficient routing protocol. The protocol is designed such that it supports the traditional NDN Daemon in every vehicle, consisting of NDN data structures and forwarding strategies, and implement rules to check the trustworthiness of messages.

References

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2. Grassi, G., et al.: *VANET via Named Data Networking*. In: IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), IEEE (2014) 410–415